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ABSTRACT

A study was conducted to assess the impact of self-paced instruction on community college students enrolled in an introductory psychology course. "Self-paced instruction" was operationally defined as learners working at their own rate toward standard objectives set by the instructor. Seventy-eight students were enrolled in three sections of the course; each section was randomly assigned to one of three types of instruction: Traditional, Modified Self-Paced, and Self-Paced. Teaching format, amount of time spent in structured class setting, and level of instructor interaction with the class varied with each group. All students were administered a series of personality, intelligence quotient, and attitudinal tests. In addition, they completed pre- and post-test cognitive examinations on course content and attitudinal questionnaires. Characteristics of students in each group were compared, and although students in the traditional group were older and worked more hours, these differences were not found to be statistically significant. Results indicated that while community college students have the cognitive ability to meet the demands of various instructional strategies, they showed a definite preference for a traditional format when compared to the other two approaches. The study also revealed significant attitudinal changes across the treatment groups, with the traditional group yielding the most positive changes. (DR)

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Learner Characteristics and Performance Effects in Self-Paced Instruction for Community College Students

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Past research has demonstrated that various teaching methodologies have differential effects on college student's performance. In addition, it has been shown that environmental and situational influences such as socioeconomic status, size of classes and program curricula affect college learning. Analysis of this work indicates that simple interactions between method and environment rarely exist. Rather, optimal learning for the individual seems to be a function of several factors.

This study was an attempt to assess the impact of one dimension of instructional method - that of self-paced instruction. Gagne' and Briggs (1974) have defined self-paced instruction as the "learner working at his or her own rate, but upon objectives set by the teacher and required of all students" (p. 187). It should not be confused with self-directed study in which objectives may vary for different students. One form of self-paced instruction reduces the number of class meetings, relying on suggested activities outside of class to serve as a useful substitute for class time. Studies by Himmel (1972) and Hohn, DesLauriers and Deaton (1976) have found more positive attitudes toward self-paced courses of this type with superior or similar levels of achievement.

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Research has also examined the interaction of personality characteristics of the learner and teaching method, as well as environmental and situational influences. A variety of characteristics have been found to interact with self-pacing in psychology courses taught in four year college programs. Some specific ones are: independence or autonomy (Grasha, 1972); need for affiliation (Beach, 1970); need for achievement (Doty, 1967); and locus of control (Eilersen, 1972; Hohn, DesLauriers, and Deaton, 1976). For example, Hohn et.al. found that a combination of low external locus of control, low endurance and high autonomy predicted comprehension for self-paced learners in introductory educational psychology.

Very little research examining interaction between the personality characteristics of students in community college settings and teaching method has been conducted. Because of this lack of investigation into this area and possible misinterpretation of score values on some of the instruments, there remains a great deal of uncertainty as to how specific personality traits and teaching methods interact at this level. However, there is reason to believe that community college learners may be more conventional, less independent, less inclined to reflective thought and less tolerant than their counterparts in four-year institutions (Medsker, 1967). In a study of high ability students, Tillery (1963) found that the main differences between students selecting community colleges and those choosing the state university were that two-year students were less autonomous and more authoritarian. Community college students also seem to differ in a variety of demographic variables such as age, socio-economic level, occupational status and amount of time available to devote to college study. Clearly though, more research is needed in this area before definitive statements can be made.

A second major purpose of this study was to determine whether learner characteristics interact in the same manner with self-paced learning when community college students are used instead of four-year students. That is, if there are in fact personality traits that distinguish one population from the other as Medsker indicates, it would seem that each group would require different types of instructional settings for optimal learning to occur.

Method

Subjects. Ninety freshmen enrolled in an "Introduction to Psychology" course at a municipal community college, served as subjects. All of those students participating in the study registered in a normal way, choosing the section that best met their time requirements. Following registration, each of the classes was then randomly assigned to treatments.

Instructional Format. All students within their separate treatment groups were exposed to a similar introduction of general psychological material for the first four weeks of the course. Following this period of orientation, the study began. At this time the total number of subjects had dropped to 78 students. However, there was no additional attrition rate during the time of the study. After the four week introductory period, students in each format were given the same list of objectives based on the course content for that section. The objectives were related to comprehension of course concepts and application of these principles to simulated psychological problems.

Traditional: Subjects in this group met during one three hour session per week in the evening. During these weekly meetings, lecture/discussion was the instructional method applied for two hours, while the latter third of the period was used for films and group activities. Within this framework, teacher interaction by design averaged approximately 67% direct influence and 33% indirect influence (Flanders, 1970).

Modified Self-Paced: This group met together once a week for a one hour lecture/discussion session. The remaining weekly two hours of "class time" were available for individual consultations with the instructor, outside work, viewing films and text readings. The resulting direct/indirect teacher ratio was approximately 55/45.

Self-Paced: This group did not meet formally as a unit during the entire four week period of the study. Upon receiving a list of objectives, along with a program of films for viewing and recommended readings, the students structured their own time during the experimental period. Individual consultation with the instructor was available for anyone who desired it. Each student was responsible for attaining the course material in whatever way he or she felt would be most efficient and effective.

Procedure. After the four week introduction, all three groups were administered a series of personality, I.Q. and attitudinal instruments during the first two days of the study. In addition, all students completed pre-test and post-test cognitive examinations and affective questionnaires at the beginning and end of the study. The instruments included the Personality Research Form A (Jackson, 1968), the Rotter Locus of Control Scale (1966), and the Shipley I.Q. Test (1940).

The Personality Research Form, which included measures of affiliation and autonomy was chosen for its pre-established interactions with instructional outcomes in previous research (Doty, 1967; Grasha, 1972; Hohn et. al., 1967). The Rotter scales were used for their ability to identify characteristics thought to be related to self-paced learning. In an effort to gain a general indication of I.Q. and to establish comparability among groups, the Shipley Test was used. It was selected largely because of its brevity and ease in scoring. The cognitive pre-test of general psychology was developed from the objectives used for the course.

The post-test cognitive examination, like the pre-test, corsisted of thirty multiple choice items, fourteen assessing application and sixteen assessing comprehension of the course content covered during the experiment. An inter-rater reliability score of .90 was attained by the independent judges sorting the items into each category (comprehension and application). Reliability of the pre and post-test instruments was established further by calculating a Kuder-Richardson 21 reliability coefficient. Reliability indices were .78 for the pre-test and .74 for the post-test. Both a demographic questionnaire and an affective inventory were included as pre-test instruments. The demographic information was collected and used to compare background characteristics of community college students with the general population of college students. The affective inventory was administered to assess attitudes of students toward certain aspects of the course upon entering and to determine whether any changes in attitudes had taken place during the course of the study.

Results

In an effort to establish that all three groups of community college students who participated in the study were similar upon entering the treatments, analysis of variance was used. The only significant differences found on any of the variables were that:

1) The traditional group was older than both of the others which were comparable.

2) The traditional people were employed for more hours per week than the other two groups.

3) The traditional group's attitude was significantly more favorable than either of the other groups in how they viewed the role of the instructor.

All variables were tested for at the .05 level of significance. None of the other attitudinal variables, cognitive pre-scores or personality characteristics were significantly different across groups.

The post-test cognitive and affective scores were compared across the three experimental groups using analyses of covariance adjusting for the corresponding pre-test scores. Table 1 presents the adjusted means and statistical significance for each of the dependent variables.

(Insert Table 1)

With this procedure, no significant differences were found in either comprehension or application among the groups. All four of the attitudinal variables (preferences for teaching method, relevancy of course material, preference for working alone or with others and perception of the teacher's role with each teaching method) however, were significant.

Because of initial group differences in age and number of hours working, additional analyses of covariance were conducted to determine what effect, if any, these factors would have on the dependent variables. In every case except one, those variables did not create any significant changes in the results. The exception was the effect of age on the change in attitudes of the students from pre-experiment to post. The specific relationships indicate that there was a differential effect across the groups, with the strongest impact being evidenced at the extremes within the age group.

Discussion

Results indicated that both a self-paced and a modified self-paced mode of teaching did not lead to improved educational outcomes when compared to a traditional format for a community college population. However, the analyses of covariance used revealed that significant attitudinal changes did occur across the various treatment groups. The traditional approach yielded more positive course attitudes when compared to these other two methods, which was in direct opposition to previous research results found with four-year students (Holn et. al., 1976).

The information found here concerning community college students' ability to function independently of an instructor suggested that he/she could still perform adequately on cognitive measures yet did not prefer this particular way of learning. This would support earlier findings of Medsker (1967) and the characteristics he suggested are evident in a community college population (conventional, less tolerant). Since there were no differences in cognitive performance at either level, it is suggested that community college students have the ability to meet the demands of various instructional strategies for a course yet they have a definite preference for a traditional format when compared to these other two approaches.

Such findings suggest that community college students may represent a different population of college age learners. Characteristics such as age, course expectations and traits other than those investigated here may be of more importance to instructional research in the community college.

Further research then, should continue to examine some of these alternative personality characteristics of all college students and to investigate their relationship to instructional format. Also, on the basis of these results, further variations in the amount and type of self-pacing are suggested. It may be that the continual

presence of an instructor in the learning process for community college students is essential to elicit favorable attitudes and improved cognitive performance. By varying the role of the instructor in the classroom and not removing him/her from it, and further examining personality traits that may be more representative of community college students, (as opposed to a four year student) perhaps an academic environment most conducive to all types of college students may be attained.

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Table 1

Analyses of Covariance
Cognitive and Affective Scores
for the Three Experimental Groups

Dependent Variable	Covariate	Adjusted Means			F Statistic	p Value
		Group # 1	Group # 2	Group # 3		
Post-Comprehension	Pre-Comprehension	5.583	5.633	4.833	1.314	0.275
Post-Application	Pre-Application	5.625	5.233	5.875	2.310	0.106
Post-Overall Attitude	Pre-Overall Attitude	3.739	3.800	4.218	22.933	<.001
Post-Preference for Teaching Method	Pre-Preference for Teaching Method	4.458	4.566	5.250	12.906	<.001
Post-Perception in the Relevancy of the Course Material	Pre-Perception in the Relevancy of the Course Material	4.458	4.766	4.500	6.356	0.003
Post-Preference for Working with Others	Pre-Preference for Working With Others	1.625	1.633	1.416	6.582	0.002
Post-Perception of the Role of the Teacher	Pre-Preception of the Role of the Teacher	4.416	4.233	5.708	11.577	<.001